

### **REMARKS**

This Amendment and Response to Office Action is in reply to the Office Action dated September 19, 2006 ("Office Action"). Claims 1 to 11 and 30 to 31 are pending in this Application. Claims 12 to 29 stand withdrawn. Applicants have cancelled Claims 3 to 7, 9, 30, and 31; have amended Claims 1, 2, 8, 10, and 11 to clarify their elements; and have added New Claims 32 and 33. Applicants have also amended portions of the Specification to correct minor grammatical errors. These amendments do not add new matter.

Applicants submit herewith a Supplemental Information Disclosure Statement.

### **ELECTION/RESTRICTIONS**

The Office Action issued a Restriction Requirement under 35 U.S.C. § 121 requiring election of one of the following inventions:

- I. Claims 1 to 11 and 30 to 31, drawn to a colloidal composition, classified in class 516, subclass 80.
- II. Claims 12 to 29, drawn to methods of making a colloidal composition, classified in class 516, subclass 82.

Applicants elected Group I, Claims 1 to 11 and 30 to 31 with traverse during a telephone conversation with Michael B. Martin on July 20, 2006. Applicants hereby affirm this election.

### **CLAIM OBJECTIONS**

The Office Action objected to Claims 4, 7, 9, and 30 under 37 C.F.R. 1.75(c), as being of improper dependent form for failing to further limit the subject matter of the previous claim. Applicants have cancelled these claims. Accordingly, Applicants respectfully request that this objection be withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. § 112 ¶2

The Office Action rejected Claims 1 to 11, 30, and 31 under 35 U.S.C. § 112 ¶2 as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Applicants have cancelled Claims 3, 4, 5, 6, 7, 9, 30, and 31. Regarding Claims 1, 2, 8, 10, and 11, Applicants have amended these claims to clarify their elements.

The Office Action states that Claim 1 defines a silicate composition doped with a metal and that “it is unclear what is intended by the phrase ‘doped with a metal’ since a metal has zero valence and the examples appear to employ metal salts resulting in metal cations and/or metal silicates.” (Office Action, paragraph 9). Applicants have amended Claims 1, 2, 10, and 11 to clarify the meaning of “metal.” Claim 8 has also been amended to clarify its elements.

Applicants respectfully assert that this rejection has been overcome and Claims 1, 2, 8, 10, and 11 are in condition for allowance. Accordingly, Applicants respectfully request that this rejection be withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102(b)

The Office Action rejected Claims 1 to 7, 30, and 31 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,597,512 to Watanabe et al. (“Watanabe”). Applicants have cancelled Claims 3 to 7, 30, and 31. With respect to Claims 1 and 2, Applicants respectfully disagree with and traverse this rejection.

Watanabe discloses a method for preparing a silica sol having an elongated shape. The method includes using CaO and MgO to achieve the elongated shape. Watanabe provides two examples of the method. In the first example, the obtained silica sol had 608 ppm by weight CaO. The silica sol was concentrated through ultrafiltration. The concentrated silica sol had 972 ppm by weight CaO. In example 2, the obtained silica sol had 622 ppm by weight CaO and was concentrated by ultrafiltration, whereupon the concentrated silica sol had 1156 ppm by weight CaO.

Amended Claim 1 (and Claim 2, which depends therefrom) is directed to a synthetic metal-containing colloidal silicate composition having a continuous aqueous phase. The composition includes a metal-silicate lattice solid phase having colloidal particles. A metal is copolymerized within the colloidal particles.

Watanabe discloses neither a synthetic metal-containing silicate composition having a continuous aqueous phase nor a metal copolymerized within colloidal particles of a metal-silicate lattice solid phase. Instead, Watanabe discloses a method of preparing silica sol having an elongated shape, where CaO and MgO are used as structure directors. Thus, Watanabe does not disclose the metal-containing silicate composition of Amended Claim 1.

It is well known in the art that structure directors, such as CaO and MgO, are separate phases from the silica sol (i.e., ion exchangeable) and are not copolymerized within the colloidal particles, evidenced at least by Examples 1 and 2 of Watanabe. In both examples, Watanabe discloses obtaining a silica sol having a lower CaO wt% (608 and 622, respectively) prior to ultrafiltration. As stated in the Office Action, after ultrafiltration, CaO increased to 972 ppm by weight and 1156 ppm by weight, respectively. (Office Action, paragraph 11). If a metal-silicate lattice solid phase including CaO were present in Watanabe, the CaO weight percent would have remained the same. The higher concentration of CaO upon ultrafiltration supports Applicants' assertion that the CaO is part of a separate phase and not copolymerized within the Watanabe silica particles.

Therefore, Applicants respectfully assert that Amended Claim 1 (and Amended Claim 2, which depends therefrom) is patentably distinct from Watanabe and is in condition for allowance for at least the reasons set forth above. Applicants respectfully request that this rejection be withdrawn.

The Office Action rejected Claims 1 to 10, 30, and 31 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,287,086 to Finlayson et al. ("Finlayson"). Claims 3 to 7, 9, 10,

30, and 31 have been cancelled. Applicants respectfully disagree with and traverse this rejection with respect to Claims 1, 2, 8, and 10 for at least the reasons explained below.

Finlayson discloses an organophilic clay that is the reaction product of a smectite clay having a cation exchange capacity of at least 0.75 milliequivalents per gram. Such organo-clays are prepared by admixing the clay with an aqueous quaternary ammonium compound. The disclosed process is a method of producing an organophilic clay from an organophobic clay, which increases the dispersibility of the clay in organic systems.

Amended Claim 1 (and Amended Claims 2, 8, and 10 that depend therefrom) is directed to a synthetic metal-containing colloidal silicate composition having a continuous aqueous phase. The composition includes a metal-silicate lattice solid phase having colloidal particles. A metal is copolymerized within the colloidal particles.

Finlayson discloses neither a synthetic metal-containing silicate composition having a continuous aqueous phase nor a metal copolymerized within colloidal particles of a metal-silicate lattice solid phase. Rather, Finlayson provides a method of producing an organophilic clay by reacting smectite clay with a quaternary amine. Thus, Finlayson does not disclose the metal-containing composition of Amended Claim 1.

Therefore, Applicants respectfully assert that Amended Claim 1 (and Amended Claims 2, 8 and 10 that depend therefrom) is patentably distinct from Finlayson and is in condition for allowance. Applicants respectfully request that this rejection be withdrawn.

The Office Action rejected Claims 1 to 11, 30, and 31 under 35 U.S.C. § 102(b) as being anticipated by Mintova and Valtchev, "Effect of silica source on the formation of nanosized silicalite-1: an in situ dynamic light scattering study," *Microporous and Mesoporous Materials*, 55 (2002): 171 to 179 ("Mintova"). Applicants have cancelled Claims 3 to 7, 9, 30, and 31. Regarding Claims 1, 2, 8, 10, and 11, Applicants respectfully disagree with and traverse this rejection.

Mintova discloses a method of preparing a zeolite. In particular, Mintova discusses preparing nanosized silicalite-1 from a variety of different silica sources. The silica sources yielded different sizes of silicalite-1 nanocrystals.

Amended Claim 1 (and Amended Claims 2, 8, 10, and 11 that depend therefrom) is directed to a synthetic metal-containing colloidal silicate composition having a continuous aqueous phase. The composition includes a metal-silicate lattice solid phase having colloidal particles. A metal is copolymerized within the colloidal particles.

Mintova does not disclose a synthetic metal-containing colloidal silicate composition having a metal copolymerized within colloidal particles of a metal-silicate lattice solid phase. On the contrary, a zeolite has an ion-exchangeable sodium (or other alkaline) content. As such, if any metal is present in the Mintova zeolite, it is not copolymerized within a metal-silicate lattice. Thus, Mintova does not disclose the metal-containing colloidal silicate composition of Amended Claim 1.

Therefore, Applicants respectfully assert that Amended Claim 1 (and Amended Claims 2, 8, 10, and 11, which depend therefrom) is patentably distinct from Mintova and is in condition for allowance for at least the reasons set forth above. Applicants respectfully request that this rejection be withdrawn.

#### CLAIM REJECTION UNDER 35 U.S.C. § 102(a)

The Office Action rejected Claims 1 to 11, 30, and 31 under 35 U.S.C. § 102(a) as being anticipated by Cundy et al., “Some observations on the preparation and properties of colloidal silicates. Part I: synthesis of colloidal silicalite-1 and titanosilicalite-1 (TS-1),” *Microporous and Mesoporous Materials*, 66 (2003): 143 to 156 (“Cundy”). Claims 3 to 7, 9, 10, 30, and 31 have been cancelled. Applicants respectfully disagree with and traverse this rejection for Claims 1, 2, 8, 10, and 11 for at least the reasons set forth below.

Cundy discloses methods for the preparation of colloidal zeolite. The Cundy method includes facilitating zeolite crystal formation (i.e., nucleation) with the introduction of various crystallization initiators. Like Mintova above, the Cundy method results in zeolite crystals.

Amended Claim 1 (and Amended Claims 2, 8, 10, and 11, which depend therefrom) is directed to a synthetic metal-containing colloidal silicate composition having a continuous aqueous phase. The composition includes a metal-silicate lattice solid phase having colloidal particles. A metal is copolymerized within the colloidal particles.

Cundy does not disclose a synthetic metal-containing colloidal silicate composition including a metal-silicate lattice solid phase with metal copolymerized within colloidal particles of the solid phase. On the contrary, Cundy merely uses structure directors to synthesize zeolite crystals. Thus, Cundy does not disclose the metal-containing colloidal silicate composition of Amended Claim 1.

Therefore, Applicants respectfully assert that Amended Claim 1 (and Amended Claims 2, 8, 10, and 11 that depend therefrom) is patentably distinct from Cundy and is in condition for allowance. Applicants respectfully request that this rejection be withdrawn.

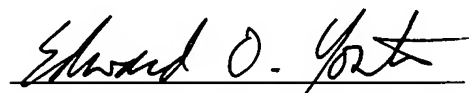
#### NEW CLAIMS

Applicants have added New Claims 32 and 33. Because these claims depend from allowable Amended Claim 1, Applicants respectfully assert that these claims are in condition for allowance.

**CONCLUSION**

In view of the foregoing amendment and remarks, Applicants respectfully request withdrawal of the objection under 37 C.F.R. 1.75(c) and withdrawal of the rejections under 35 U.S.C. § 112 ¶2 and 35 U.S.C. §§ 102(a) and 102(b). Applicants respectfully assert that all pending claims in this Application are in condition for allowance and earnestly solicit early notice to this effect.

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read "Edward O. Yonter", is written over a horizontal line.

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Date: January 17, 2007